

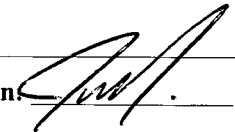
Work Order ID 148782

Friday, July 08, 2016 8:05:29 AM

148782

Page 1

Item ID: D5445-041 Accept ***N900040100*** Setup Start ***NS1***
 Revision ID: Stop ***NS2***
 Item Name: Cross Beam Assembly, LH
 Start Date: 07/08/2016 Start Qty: 1.00 ***1*** Cust Item ID:
 Required Date: 07/15/2016 Req'd Qty: 1.00 ***1*** Customer:
 Reference:

Approvals: Process Plan:  Date: Tooling: Date: Run Start ***NR1***
 QC: Date: SPC (Y/N): Date: Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr	Revision Nbr
D5445	A

100		0.00							
100									
CNC Bend 1	Memo	0.01							
CNC Delta 100 Bender	BEND/CUT AS PER DWG								

JW 16-07-11

110	QC5- Inspect part completeness to step on W/O	0.00							
110									
QC	Memo	0.00							
Quality Control									

① 16-07-13 PD

120		0.00							
120									
Mill Conv	Memo	0.01							
Conventional Milling Machine	MILL/DRILL AS PER DWG								
	DEBURR								

1 0
 DAS
 32
 9-89
 16-07-11

148782

Friday, July 08, 2016 8:05:29 AM

N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 07/08/2016 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 07/15/2016 **Req'd Qty:** 1.00 *** 1 ***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Run Start *NR1*

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Stop *NR2*

Tool ID	Tool #	Plan Code
---------	--------	-----------

Accept Qty	Reject Qty	Reject Number	Insp. Stamp
			DAS
			32
			9-89

130

QC2- Inspect parts off machine FAI/FAIB

0.00

130

QC

Memo

0.00

Quality Control

16-07-11

P.T.O.

140

QC8- Inspect parts - second check

0.00

140

QC

~~Memo~~

0.00

Quality Control

DAS
44
9-89

44
9-89 16-07-13

150

Chemical Conversion Coat per QSI005 4.1

0.00

150

HandFinish

Memo

0.00

Hand Finishing

2016/07/13
BEB

DQA: dot Date: 16.08.09



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: dot Date: 16/07/26

Work Order update only ☐

Work Order: <u>148 782</u> Part No. <u>D5445-1</u> NCR No. <u>16-5933</u>		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table border="0"> <tr> <td>Skid-tube ☐</td> <td>Cross tube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☐</td> </tr> <tr> <td>Machining ☒</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☐	Machining ☒	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																																																																																															
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Date: <u>16-07-12</u>		Step #: <u>120</u>		QTY Effective: <u>1</u>		MRB (QSI042) Approval DAS 9 9-89 <u>16-07-12</u>																																																																																																																																	
Description Work Order Deviation				Disposition																																																																																																																																			
The countersinks are too deep, shown $\phi 0.179''$ are $\phi 0.220''$ L.C. operator				Acceptable as per email part to be use for testing only. Not for production.																																																																																																																																			
				Completed By <u>see email.</u> <u>J.C.L. 16-07-12</u> Lead hand / Supervisor Approval Verification DAS 9 9-89 <u>16-07-12</u> QC / QA Coordinator Approval DAS 9 9-89 <u>16-07-12</u>																																																																																																																																			
Root Cause <table border="0"> <tr><td>Environment</td><td>☐</td><td>No Re-verification</td><td>☐</td></tr> <tr><td>Design</td><td>☐</td><td>Operator</td><td>☒</td></tr> <tr><td>Doc/Data</td><td>☐</td><td>Offset/Setup</td><td>☐</td></tr> <tr><td>Equip/Tooling</td><td>☐</td><td>Supplier</td><td>☐</td></tr> <tr><td>Handling/Pre</td><td>☐</td><td>Training</td><td>☐</td></tr> <tr><td>Material</td><td>☐</td><td>Use for Testing</td><td>☐</td></tr> <tr><td>Internal Transport</td><td>☐</td><td>Poor Information</td><td>☐</td></tr> <tr><td>Tribal Knowledge</td><td>☐</td><td>Rushing</td><td>☐</td></tr> <tr><td>LOA</td><td>☒</td><td>Product Improvement</td><td>☐</td></tr> <tr><td>Substation</td><td>☐</td><td>Process Improvement</td><td>☐</td></tr> <tr><td>Past Expiry Date</td><td>☐</td><td>Manufacturing Process</td><td>☐</td></tr> <tr><td>Misidentified</td><td>☐</td><td>Past Due</td><td>☐</td></tr> </table>		Environment	☐	No Re-verification	☐	Design	☐	Operator	☒	Doc/Data	☐	Offset/Setup	☐	Equip/Tooling	☐	Supplier	☐	Handling/Pre	☐	Training	☐	Material	☐	Use for Testing	☐	Internal Transport	☐	Poor Information	☐	Tribal Knowledge	☐	Rushing	☐	LOA	☒	Product Improvement	☐	Substation	☐	Process Improvement	☐	Past Expiry Date	☐	Manufacturing Process	☐	Misidentified	☐	Past Due	☐	FAULT CATEGORY <table border="0"> <tr><td>Pressure/Forced</td><td>☐</td><td>Temperature/Cure</td><td>☐</td><td>Power Loss/Surge</td><td>☐</td><td>Positioned Wrong</td><td>☐</td></tr> <tr><td>Bending</td><td>☐</td><td>Set-up</td><td>☐</td><td>Folio/Program</td><td>☐</td><td>Outside Dimensions</td><td>☐</td></tr> <tr><td>Centre Not Concentric</td><td>☐</td><td>BOM/Route</td><td>☐</td><td>Grain</td><td>☐</td><td>Over/Under tolerance</td><td>☐</td></tr> <tr><td>Cracks</td><td>☐</td><td>Broken/Damage/Defect</td><td>☐</td><td>Weld</td><td>☐</td><td>Part Incorrect</td><td>☐</td></tr> <tr><td>Crimp/Kink/Ripple/Wave</td><td>☐</td><td>Inspection Incomplete/Unqualified</td><td>☐</td><td>Wrong Stock Pulled</td><td>☐</td><td>Part Lost/Missing</td><td>☐</td></tr> <tr><td>Cuffs</td><td>☐</td><td>Contamination</td><td>☐</td><td>Out of Sequence</td><td>☐</td><td>Part Moved</td><td>☐</td></tr> <tr><td>Crushing</td><td>☐</td><td>Countersink</td><td>☒</td><td>Off-set</td><td>☐</td><td>Drawing</td><td>☐</td></tr> <tr><td>Heat Treat</td><td>☐</td><td>Cut Too Short</td><td>☐</td><td>Mislabeled</td><td>☐</td><td>Finish</td><td>☐</td></tr> <tr><td>Wave/Twist in Tube</td><td>☐</td><td>Instructions Incomplete/Unclear</td><td>☐</td><td>Fit/Function</td><td>☐</td><td>Misread</td><td>☐</td></tr> <tr><td>Marks/Chatter</td><td>☐</td><td>Drill Holes</td><td>☐</td><td>Misaligned/off center</td><td>☐</td><td>Turning Sequence</td><td>☐</td></tr> </table>						Pressure/Forced	☐	Temperature/Cure	☐	Power Loss/Surge	☐	Positioned Wrong	☐	Bending	☐	Set-up	☐	Folio/Program	☐	Outside Dimensions	☐	Centre Not Concentric	☐	BOM/Route	☐	Grain	☐	Over/Under tolerance	☐	Cracks	☐	Broken/Damage/Defect	☐	Weld	☐	Part Incorrect	☐	Crimp/Kink/Ripple/Wave	☐	Inspection Incomplete/Unqualified	☐	Wrong Stock Pulled	☐	Part Lost/Missing	☐	Cuffs	☐	Contamination	☐	Out of Sequence	☐	Part Moved	☐	Crushing	☐	Countersink	☒	Off-set	☐	Drawing	☐	Heat Treat	☐	Cut Too Short	☐	Mislabeled	☐	Finish	☐	Wave/Twist in Tube	☐	Instructions Incomplete/Unclear	☐	Fit/Function	☐	Misread	☐	Marks/Chatter	☐	Drill Holes	☐	Misaligned/off center	☐	Turning Sequence	☐
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Work Order ID 148782***148782***

Page 3

Friday, July 08, 2016 8:05:29 AM

Item ID: D5445-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Cross Beam Assembly, LH
Start Date: 07/08/2016 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 07/15/2016 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160	QC7-Inspect Chemical Conversion Coat	0.00							
160									
QC	Memo	0.00							
Quality Control									
170		0.00							
170									
Small Fab	Memo	0.00							
Small Fab	INSTALL NUT PLATES AS PER DWG								
180	QC5- Inspect part completeness to step on W/O	0.00							
180									
QC	Memo	0.00							
Quality Control									

D 16-07-13 PD

1 FF JUL 14 2016

D 16-07-14 DAS 9

Work Order ID 148782

Friday, July 08, 2016 8:05:29 AM

148782

Page 4

Item ID: D5445-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: Stop ***NS2***
Item Name: Cross Beam Assembly, LH
Start Date: 07/08/2016 Start Qty: 1.00 ***1*** Cust Item ID:
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Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
190	White Gloss (Ref 4.3.5.1) per QSI005 4.3-Adum	0.00							
190									
Powdercoat	Memo	0.00							
Powder Coating	MASK NUT PLATE HOLES								
200	QC3 - Inspect Part Finish	0.00							
200									
QC	Memo	0.01							
Quality Control									
210		0.00							
210									
Small Fab	Memo	0.01							
Small Fab	INSTALL END CAPS WITH SIKAFLEX AS PER NOTE 8								

N/A Jm
SEE E-mail
ATTACHED Jm

Work Order ID 148782

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Friday, July 08, 2016 8:05:29 AM

Item ID: D5445-041 Accept ***N900040100*** Setup Start ***NS1***
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 Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
 QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
220	QC5 - inspect part completeness to step on W/O	0.00							
220									
QC	Memo	0.01		N/A	DAS 9 9-89				
Quality Control									
230	Identify as per dwg & Stock Location: <u>Prelim</u>	0.00							
230									
Packaging	Memo	0.00							
Packaging									
240	QC21 - Final Inspection - Work Order Release	0.00							
240									
QC	Memo	0.01							
Quality Control									

RD16-1016-01

DAS
21
9-89

JUL 19 2016

Picklist Print

Page 1

Friday, July 08, 2016 8:05:28 AM

Work Order ID: 148782

148782

Parent Item: D5445-041

D5445-041

Parent Item Name: Cross Beam Assembly, LH

Start Date: 07/08/2016

Required Date: 07/15/2016

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A NEW ISSUE 16-07-07 JLM VERIFIED BY:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
M6061T6TR1.5X1.0W1 25		Purchased	No				f	0.0000		6			
M6061T6TR1 5X1 0W125													
6061-T6 Rect Tube 1.5 x 1.0 x .125w													
D5445-043		Manufactured	No				Each	0.0000		2			
D5445-043									**				
End Cap Assembly													
CR2672-3-(03)		Purchased	No				Each	0.0000		12			DAS 6 9-89
CR2672-3-(03)									**	135200			
Cherry Rivet													
MS21059-4		Purchased	No				Each	0.0000		5			DAS 6 9-89
MS21059-4									**	135200			
Nut Plate													
MS21061L4		Purchased	No				Each	0.0000		1			DAS 6 9-89
MS21061L 4									**	135200			
Nutplate													
MS24694-S4		Purchased	No				Each	56.0000		4			DAS 6 9-89
MS24694-S4									**				
Screw													

Location

Loc Qty

Loc Code

ST285

56

11788

56

JUL 13 2016

ITEM	QTY	P/N	DESCRIPTION
	X	D5445-041	CROSS BEAM ASSEMBLY, LH
1	2	D5445-043	END CAP ASSEMBLY
2	1	D5445-1	CROSS BEAM, LH
3	12	CR2672-3(03)	RIVET CHERRY, CSK
4	5	MS21059-4	NUT PLATE
5	1	MS21061L4	NUT PLATE
6	4	MS24684-S4	SCREW, CSK 100°
7	A/R	SIKAFLEX-241/-291	SEALANT

DETAIL A

DETAIL B

D5445-041 CROSS BEAM ASSEMBLY, LH

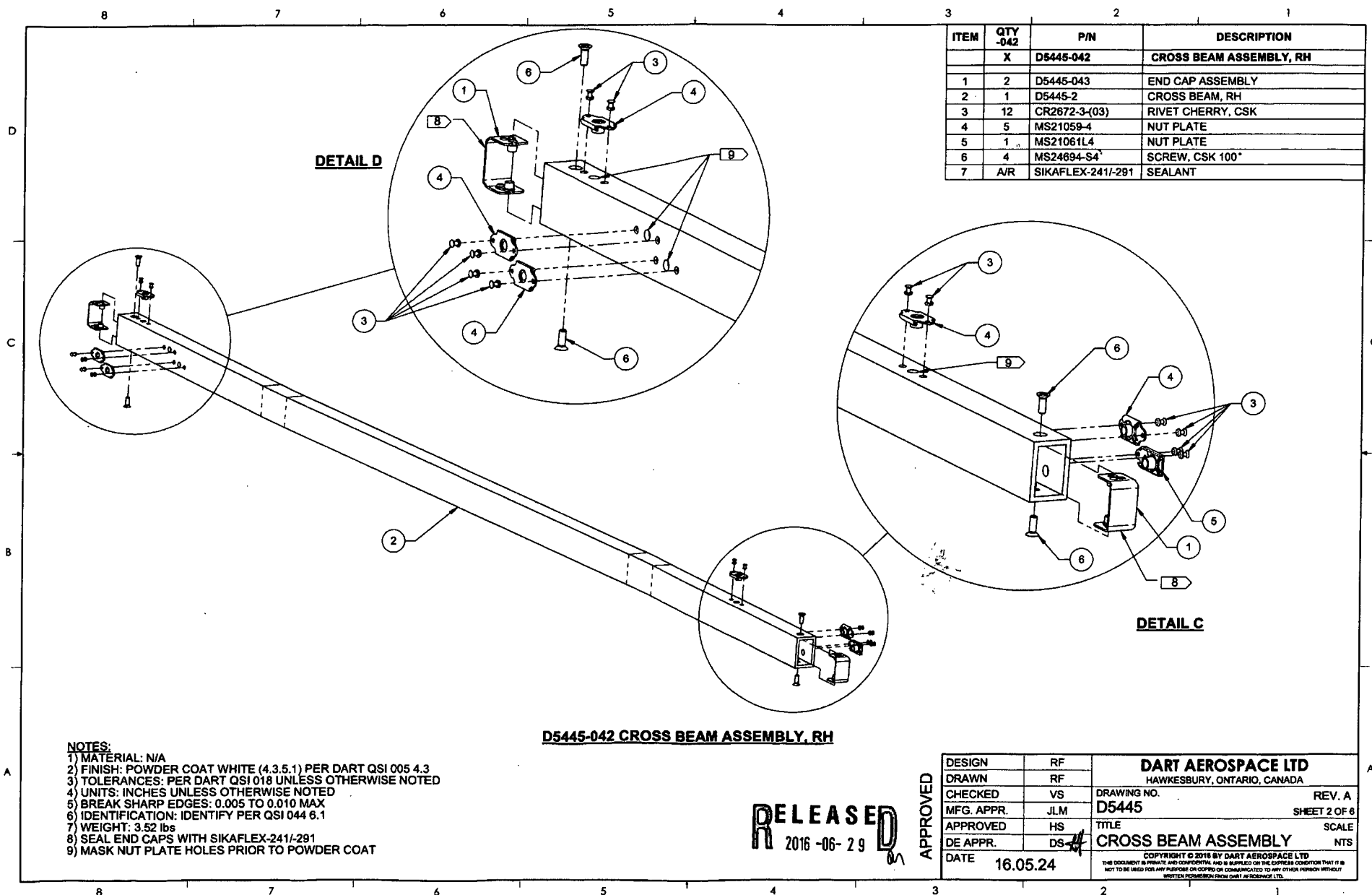
NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: POWDER COAT WHITE (4.3.5.1) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY PER QSI 044 6.1
- 7) WEIGHT: 3.52 lbs
- 8) SEAL END CAPS WITH SIKAFLEX-241/-291
- 9) MASK NUT PLATE HOLES PRIOR TO POWDER COAT

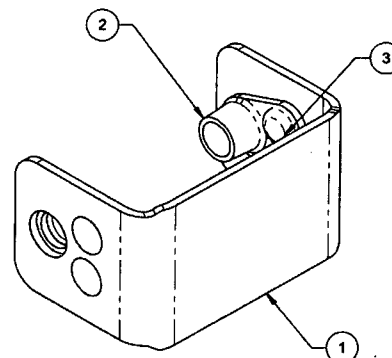
RELEASED
2016-06-29
EEN/6-579

APPROVED

A	NEW ISSUE	RF	16.05.24
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	VS	DRAWING NO.	REV. A
MFG. APPR.	JLM	D5445	SHEET 1 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	CROSS BEAM ASSEMBLY	NTS
DATE	16.05.24	COPYRIGHT © 2016 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



ITEM	QTY -043	P/N	DESCRIPTION
	X	D5445-043	END CAP ASSEMBLY
1	1	D5445-3	END CAP
2	2	MS21086L08	ANCHOR NUT
3	4	MS20426AD3-4	RIVET, SOLID, CSK



D5445-043 END CAP ASSEMBLY

NOTES:

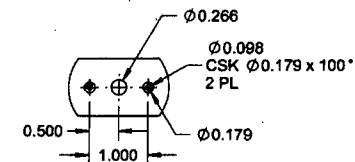
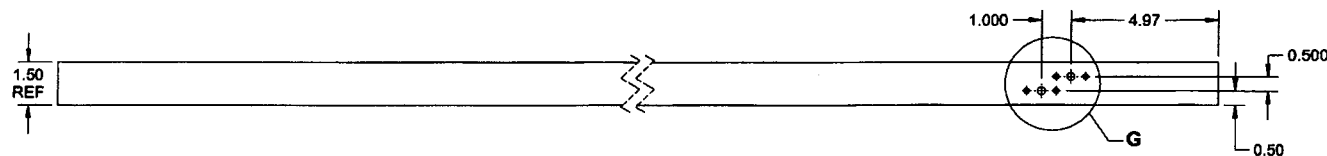
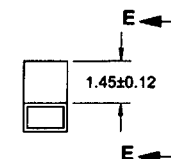
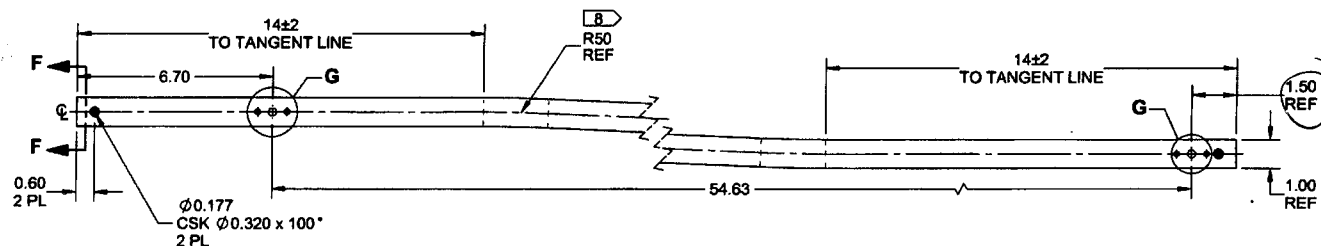
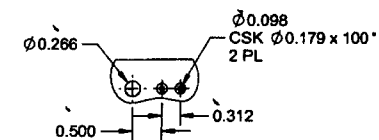
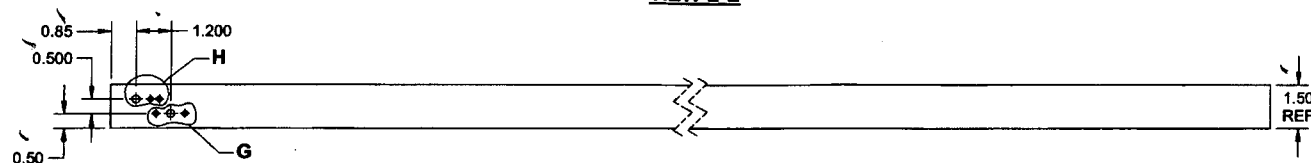
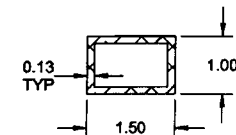
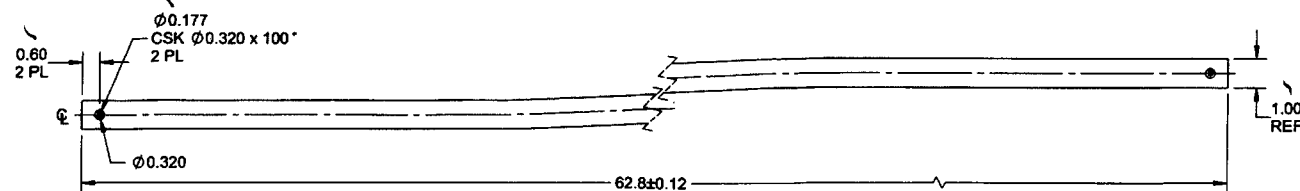
- 1) MATERIAL: N/A
- 2) FINISH: N/A
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: IDENTIFY PER QSI 044 6.7
- 7) WEIGHT: 0.01 lbs

RELEASED
2016-06-29

APPROVED

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	VS	DRAWING NO.	REV. A
MFG. APPR.	JLM	D5445	SHEET 3 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	CROSS BEAM ASSEMBLY	
DATE	16.05.24	COPYRIGHT © 2016 BY DART AEROSPACE LTD	
THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			

8 7 6 5 4 3 2 1



D5445-1 CROSS BEAM, LH

NOTES:

- 1) MATERIAL: POSSIBLE VENDOR McMASTER CARR, P/N 6546K38, 6ft IN LENGTH
6061-T6 RECTANGULAR TUBE 1.5" x 1.0" x 0.125" WALL
PER ASTM B221, YIELD STRENGTH: 35,000 psi
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 3.44 lbs
- 8) BEND RADIUS NOT CRITICAL

RELEASED
2016-06-29

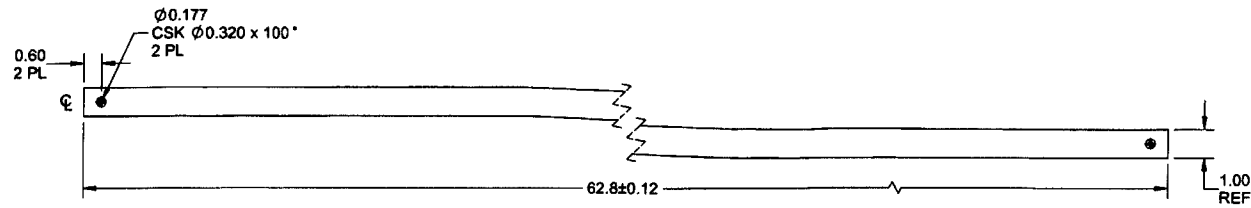
APPROVED

DESIGN	RF
DRAWN	RF
CHECKED	VS
MFG. APPR.	JLM
APPROVED	HS
DE APPR.	DS
DATE	16.05.24

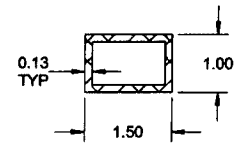
DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D5445	REV. A
TITLE CROSS BEAM ASSEMBLY	SHEET 4 OF 6
SCALE NTS	
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8 7 6 5 4 3 2 1

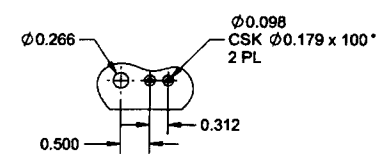
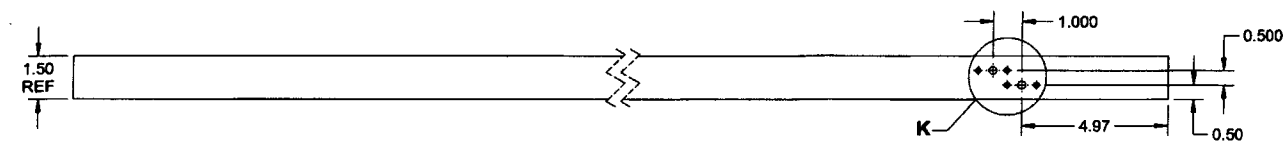
8 7 6 5 4 3 2 1



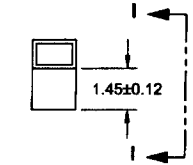
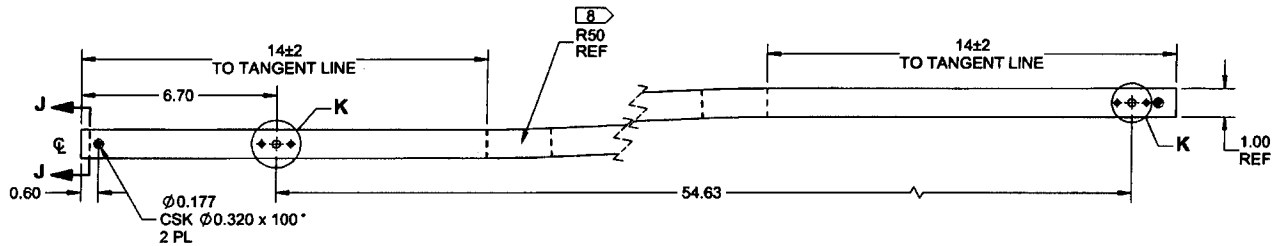
VIEW I-I



SECTION J-J



DETAIL L



DETAIL K

D5445-2 CROSS BEAM, RH

NOTES:

- 1) MATERIAL: POSSIBLE VENDOR McMASTER CARR, P/N 6548K38, 6R IN LENGTH
6061-T6 RECTANGULAR TUBE 1.5" x 1.0" x 0.125" WALL
PER ASTM B221, YIELD STRENGTH: 35,000 psi
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 3.44 lbs
- 8) BEND RADIUS NOT CRITICAL

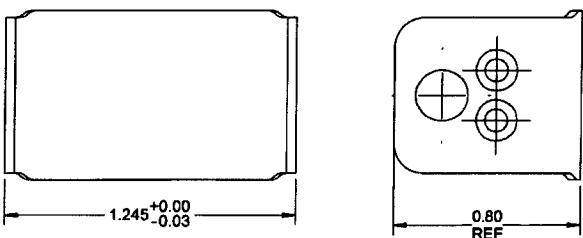
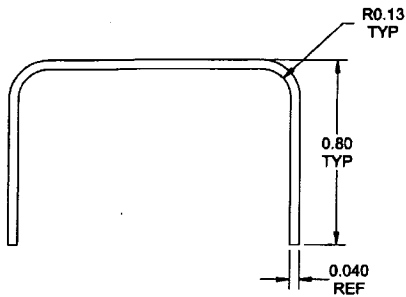
RELEASED
2016-06-29

APPROVED

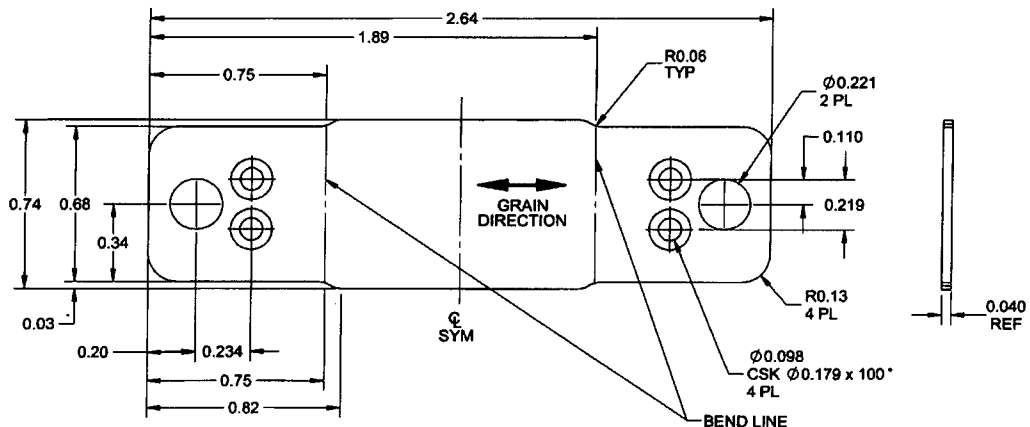
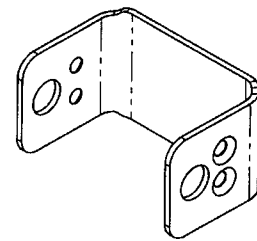
APPROVED

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	VS	DRAWING NO.	REV. A
MFG. APPR.	JLM	D5445	SHEET 5 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	CROSS BEAM ASSEMBLY	NTS
DATE	16.05.24	COPYRIGHT © 2016 BY DART AEROSPACE LTD	
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8 7 6 5 4 3 2 1



D5445-3 END CAP
(MAKE FROM D5445-3F)



D5445-3F FLAT PATTERN

NOTES:

- 1) MATERIAL: 6061-T6/T62 ALUMINUM SHEET, 0.040 THICK
PER QQ-A-250/11 OR AMS-QQ-A-250/11
OR AMS 4025 OR AMS 4027 OR ASTM B209
REF DART SPEC M6061T6S
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: N/A
- 7) WEIGHT: 0.01 lbs

RELEASED
2016-06-29

APPROVED

DESIGN	RF	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	VS	DRAWING NO.	REV. A
MFG. APPR.	JLM	D5445	SHEET 6 OF 6
APPROVED	HS	TITLE	SCALE
DE APPR.	DS	CROSS BEAM ASSEMBLY	NTS
DATE	16.05.24	COPYRIGHT © 2016 BY DART AEROSPACE LTD.	
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8 7 6 5 4 3 2 1

DART AEROSPACE LTD		Work Order: 148782
Description: Cross Beam Assembly, LH		Part Number: DS445-1
Inspection Dwg: DS445 Rev: A		Page 1 of 1

INSPECTION SHEET

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
62.8	± 0.12	62.80	✓		tape	
14	± 2.0	15.50	✓		↓	
14	± 2.0	15.80	✓		↓	
1.00	± 0.030	0.999	✓		caliper	JCL-08
1.50	± 0.030	1.499	✓			
0.85	± 0.030	0.852	✓			
1.200	± 0.010	1.200	✓			
0.50	± 0.030	0.500	✓			
0.500	± 0.010	0.312	✓			
Ø 0.266	± 0.006 -0.001	0.267	✓			
Ø 0.098	± 0.004 -0.001	0.098	✓			
0.500	± 0.010	0.500	✓			
0.312	± 0.010	0.312	✓			
0.500	± 0.010	0.185	✓			
0.500	± 0.010	0.500	✓			
1.000	± 0.010	1.000	✓			
0.60	± 0.030	0.600	✓			
Ø 0.177	± 0.006 -0.001	0.179	✓			
0.70	± 0.030	0.700	✓			
0.500	± 0.010	0.500	✓			
1.000	± 0.010	1.000	✓			
Ø 0.266	± 0.006 -0.001	0.267	✓			
Ø 0.098	± 0.004 -0.001	0.099	✓			
54.83	± 0.030	54.833	✓		Tape	
4.97	± 0.030	4.966	✓		Caliper	JCL-08
1.000	± 0.010	1.000	✓		↓	
0.50	± 0.030	0.500	✓			
0.500	± 0.030	0.500	✓		↓	

Measured by: DAS 32	Checked by: DAS 44	QC Inspector:
Date: 16-07-11	Date: 16-07-13	Date:

Engineering Approval: (If necessary)	Date:
--	--------------

Rev	Date	Change	Revised by	Approved
B	14.07.31	New Issue	KJ	

Jean-Luc Menard

From: David Shepherd
Sent: Monday, June 27, 2016 12:33 PM
To: Denis Maranda; Linda Lacelle; Jean-Luc Menard
Cc: Harvey Siemens; Bill Beckett; Kim Johnston; Roberto Fuentes; Patrick Smith
Subject: R66 Basket Parts Required

All,

While Harvey was on holiday, I worked with Roberto to try to move the R66 basket project forward.

The following drawings have recently been approved in the Vault and are on their way to Hawkesbury with ECN 16-579 for processing :

- 1) D5350 Rev B (R66 Beam Assy)
- 2) D5354 Rev B (R66 Fwd Clamp Assy)
- 3) D5355 Rev B (R66 Aft Clamp Assy)
- 4) D5445 Rev A (Cross Beam Assy)

To re-do the structural test, Roberto would like the following parts in Calgary:

Qty	Part Number	Notes
1	D5445-041	Powder Coat not required, D5445-043 End Caps not required
1	D5445-042	Powder Coat not required, D5445-043 End Caps not required
1	D5350-1	Powder Coat not required, Drill 0.375 holes to 0.257, OK to cut on waterjet
1	D5350-3	Powder Coat not required, Drill 0.375 holes to 0.257, OK to cut on waterjet
1	D5354-1	Anodize not required
1	D5354-2	Anodize not required
2	D5355-1	Anodize not required

Please provide us with a date as to when we can have these parts in Calgary so that we can resume our testing. We will need to receive the parts with a signed Conformity Inspection Record. We will send the draft Conformity Inspection Record closer to the parts being ready for shipping.

David (Roberto's scribe)

Wednesday, June 08, 2016 9:02:05 AM

Page 1 of 1

All amounts are calculated in domestic currency.

All Vendors PO ID PO32456 Receipt Dates from 6/6/2016 to 6/6/2016 All Line Item Types

All Item ID/GL/WOs All Rec. Employees All Currencies

Grouped by Vendor ID

Purchase Order ID/ Curr Type	Line Nbr/ Insp Req	Project ID	Reference/ Description/ Cert Std	PO U/M / Stock U/M	Required Date Required Qty	Recv Date/ Recv Emp	Recv Qty (PO U/M)	Cost Per Unit/ Recv Value	Inspected Qty/ Rejected Qty (PO U/M)	MRB Qty/ MRB Reject Qty	Book Amt
VendorID\Vendor Name		VU-MCM001	McMaster-Carr Supply Co,								
PO32456	I		71900-90	Each	6/1/2016	6/6/2016	4.0000		0.0000	0	\$0.00
USD	No		6546K999 6061-T6 ALUM RECTANGLE TUBE 1/8" X 1" X 1-1/2" m134971		4.0000	PLOU01			0.0000	0	
Total Received Quantity:										4.0000	
Total Qty to Inspect (PO U/M):										0.0000	
Total Reject Quantity:										0.0000	
Total Receipt Value:											
Total Balance Due Quantity:										0.0000	



Packing List

200 Aurora Industrial Pkwy
Aurora OH 44202-8087
330-995-5500
cle.sales@mcmaster.com

Dart Aerospace Ltd
1270 Aberdeen St
Hawkesbury ON K6A 1K7
Canada
Attention: Chantal Lavoie

Purchase Order
PO32456

Order Placed By
Chantal Lavoie

McMaster-Carr Number
3738720-01

Page 1 of 1

06/03/2016

Line	Product	Ordered	Shipped
1	6546K999 Extruded 6061-T6 Aluminum Rectangular Tubing, , 1" X 1-1/2", 1/8" Wall Thickness, 6' Length, , ** with Material Certificate **	4 Each	4 ✓

Sp/6-6-8



Sapa Industrial Extrusions
1550 KIRBY LANE

SPANISH FORK, UT
84660-1349

Sapa Extrusions Inc., a Subsidiary of Sapa AB

Invoice To Customer

RYERSON PROCUREMENT CORP
PO BOX 91601

LUBBOCK, TX - 79490

Ship To Customer

RYERSON PROCUREMENT CORP
2580 TECHNOLOGY DR

ELGIN, IL - 60123

Certified Inspection Report

Sales Order Number	Line No.	Customer P/O	Cert Number	Page
1101063550	2	4500746888-2	SAPA2449369	1 of 2
			Cert Creation Date	Cert Print Date
			29-MAY-16	29-MAY-16

Quantity Shipped	Date Shipped	Item Description	Specification
1074 LB	29-MAY-16	Extruded Hollow Rect. Tube 1.000 H x 1.500 W x 0.125 WALL 72.5 IN LN FIN M-MILL W/F .661 F 14 CS 1.8 6061/T6 Marking CONTINUOUS	ASTMB221 REV 14 ASMESB221 REV 09 AMS-QQ-A-200/8 REV A
B/L	Item No.		
742803	G03993837		
Delivery Id	Item No. Rev		
4790684	--		
Customer Part No.			
300038850			

Applicable Specifications, Revisions and Exceptions

TAG: MCMASTER

COMPOSITION NOTE: The values for 'Others Each' and 'Others Total' have met the limits as shown on this certified inspection report. Remainder is Aluminum.

Legal Statement

We hereby certify that, unless otherwise indicated, the material covered by this report has been manufactured, inspected, and tested in accordance with, and has been found to meet, the applicable requirements described herein, including any specifications forming a part of the description and that samples representative of the material met the composition and had the mechanical properties shown on the face of this certification. Also, note that mercury is not a normal contaminant in aluminum alloys and neither it nor any of its compounds are used in the manufacture of our product. This certification is not to be reproduced in partial form without prior written approval of our Quality Assurance Dept.

Signature And Title

Justin Donald
Quality Control Manager

29-MAY-16

Quantities per Lot / Packages

Package Number	Lot Number	Quantity	UOM	Weight	
				Gross	Net
G14-PKG1802861	22480616	132	PCS	548	537
G14-PKG1802862	22480616	132	PCS	548	537

Composition Limits

Alloy	Si		Fe		Cu		Mn		Mg		Cr		Zn	
	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max
6061	0.40	0.80	---	0.70	0.15	0.40	---	0.15	0.80	1.20	0.04	0.35	---	0.25



Sapa Industrial Extrusions
1550 KIRBY LANE

SPANISH FORK, UT
84660-1349

Certified Inspection Report

Sales Order Number

1101063550

Line No.

2

Customer P/O

4500746888-2

Cert Number

SAPA2449369

Page

Page 2 of 2

Cert Creation Date

29-MAY-16

Cert Print Date

29-MAY-16

Alloy	Ti		Others Each		Others Total	
	Min	Max	Min	Max	Min	Max
6061	---	0.15	---	0.05	---	0.15

Composition Results

Heat / Cast	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Others Each	Others Total
S16051608	0.74	0.35	0.23	0.06	0.85	0.05	0.06	0.02	--	--

Mechanical Property - Test Limits

Test Type			UTS - L		TYS - L		EL 4D-Long	
UOM			KSI		KSI		PCT	
# of Tests			--		--		--	
Test Temper	Lot Number	# of Tests	MIN Value	MAX Value	MIN Value	MAX Value	MIN Value	MAX Value
T6	22480616	2	45.0	45.2	41.1	41.9	10.0	12.0

Cert Notes

Material manufactured to T6511 specifications also meets T6 requirements.

All elements are represented in the chemical analysis section. The remainder is Aluminum.

All mill finish alloys produced at Sapa Industrial Extrusions comply with Directive 2011/65/EU (RoHS 2) with the exception of 6262 alloy.

In accordance with EN 10204, Test Report Type 2.2 and Certificate Type 3.1

Material produced in compliance to EN 10204 3.1

Melted in USA or Qualifying Countries (as defined in Defense Federal Acquisition Regulation Supplement (DFARS) Section 225-872-1

Manufactured in USA

Manufactured in the United States



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
Tel: 613 632 9577
Fax: 613 632 1053

PURCHASE ORDER

Purchase Order ID PO32456

Purchase Order Date 5/24/2016

PO Print Date 5/25/2016

Page Number 1 of 1

Order From :

VU-MCM001

MCMaster-CARR SUPPLY CO,
P.O. BOX 7690
CHICAGO, IL 60680-7690
US

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN
HAWKESBURY, ON K6A 1K7
CANADA

E-MAILED

MAY 25 2016

Contact Name

Vendor Phone 330 995 5500

Buyer

Chantal Lavoie

Customer POID

Customer Tax # 10127-2607

Ship To Contact

Terms Net 10

Ship To Phone

Currency USD

Ship Via:

Purolator ground ppd

FOB

FCA - (Free Carrier)

Ship Acct:

Line Nbr	Reference Vendor Part Number Line Comments Delivery Comments	Description/ Mfg ID	Req Date/ Taxable Promise Date	CD	Req Qty/ Unit of Measure	PO Unit Price	Extended Price
1	71900-90	6546K999 6061-T6 ALUM RECTANGLE TUBE 1/8" X 1" X 1-1/2"	6/1/2016		4.00	\$35.00	\$140.00
	MATERIAL CERT REQUIRED		Yes 6/1/2016		Each		

Sp/6-6-8

Deliver To: CHANTAL

Line Total: \$140.00

PO Total: \$140.00

CL

Note: Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Change Nbr: 2

Change Date: 5/25/2016

Patrick Duval

From: Roberto Fuentes
Sent: Tuesday, July 12, 2016 11:51 AM
To: Jean-Luc Menard
Cc: Patrick Duval
Subject: RE: d5445 beam

Yes, it is acceptable for this test only.

Roberto

-----Original Message-----

From: Jean-Luc Menard
Sent: July-12-16 8:12 AM
To: Roberto Fuentes <rfuentes@dartaero.com>
Cc: Patrick Duval <pduval@dartaero.com>
Subject: d5445 beam

Hi Roberto,
We have one of the beams that the c,sink are to deep(see attached).
Is this still acceptable for your tests?
Let me know,
JL

-----Original Message-----

From: Jean-Luc Menard
Sent: Tuesday, July 12, 2016 10:10 AM
To: Jean-Luc Menard <jmenard@dartaero.com>
Subject: